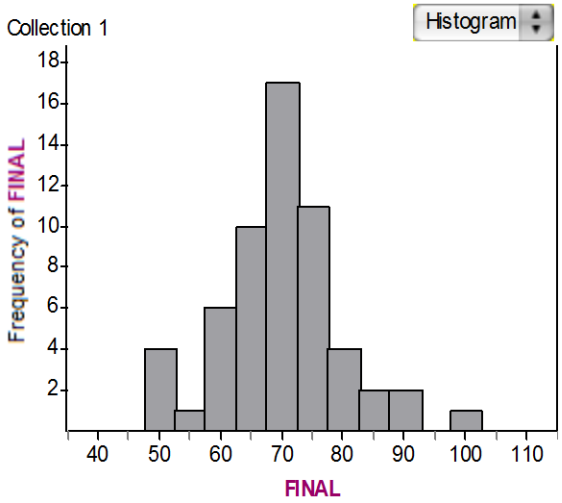
Final Class Project

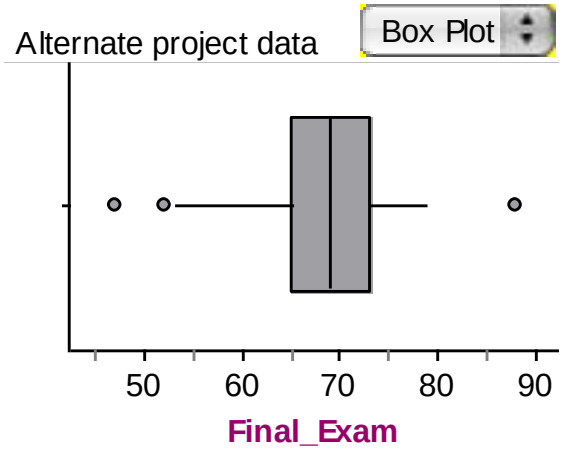
Introduction

Instructions for generating our sample:

1) First we numbered the people from …
2) Used the calculator randInt(….
3) First ____ people are our sample
4) Ignore …
5) Took the data from excel and …

Are the final exam scores averaging less than 75%?





Mean: 69.897
Min: 48
Q1: 65
Med: 70
Q3: 75
Max: 100
Std.: 9.771

Outlier test:
IQR =
Q1 – 1.5(IQR) =
Q3 + 1.5(IQR) = Normal data = (,)
There are _____ outliers at _____, _____, …

The shape of the distribution of final exam scores is _____and ___modal. The center of the distribution is at the mean/median of ____% with a std dev/IQR of _____%. The spread of the distribution is the range going from a score of _____% to _____%.

Are the final exam scores averaging less than 75%?

$\bar{X}$ = 69.8966 μ = 75 s = 9.77051 n = 58 df = 57 α = 0.05

Conditions:

1-	1-
2-	2-
3-	3-

Ho: μ=___% Ha: μ <, >, ≠ __%

$t = \frac{\bar{x}-\mu}{s/\sqrt{n}}$ = #

P(t < , > #) = _____

Conclusion
(We reject/ do not reject Ho …
We have sufficient/insufficient …)

Are the final exam scores averaging less than 75%?

$$\bar{x} \pm t^* \left({}^{s}/_{\sqrt{n}} \right) = (a, b)$$

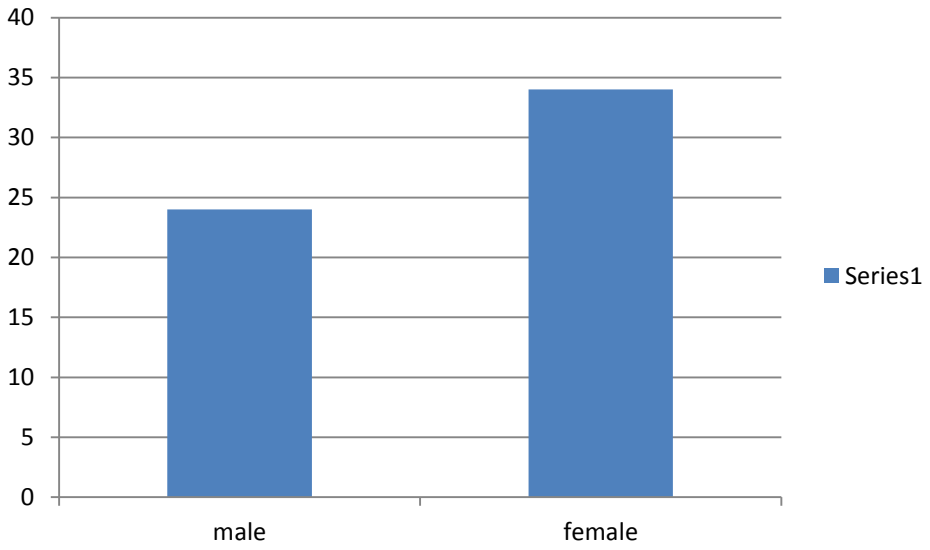
Conclusion (We are ____% confident …)

Do more males takes this class than females?

Males: $\hat{p}$= .414

Female: $\hat{p}$= .586

Male	Female
24	34



Do more males takes this class than females?

Conditions:

1-

2-

3-

1-

2-

3-

Ho: p= ___

Ha: p >, <, ≠ ____

$Z = \frac{\hat{p}-p}{\sqrt{\frac{p(1-p)}{n}}}$ = #

P(z >, < #)= _____

Conclusion

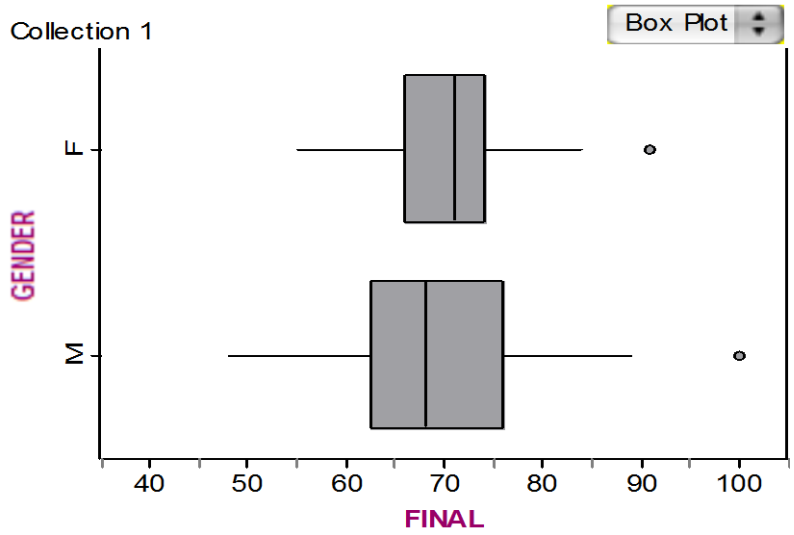
Do more males takes this class than females?

$$\hat{p} \pm Z^* \sqrt{\frac{(\hat{p})(1-\hat{p})}{n}}$$

= (a, b)

Conclusion

Are the final exam scores the same for males and females?



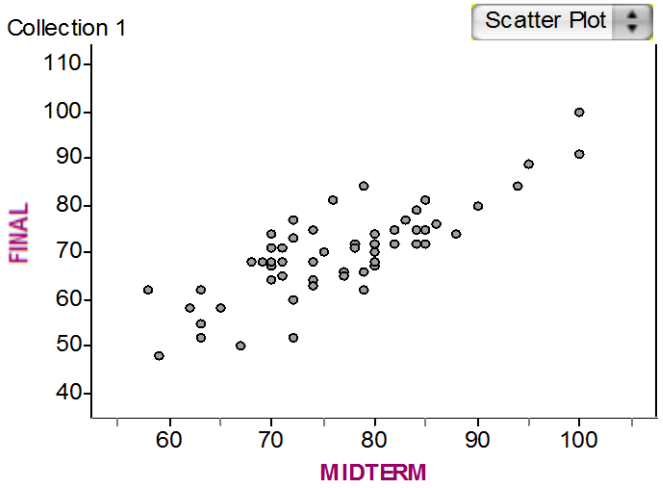
Compare:
Shape
Center
Spread

Example: The center of the males is the mean/median of _____ which is higher than the center of the females which is the mean/medianof _____.

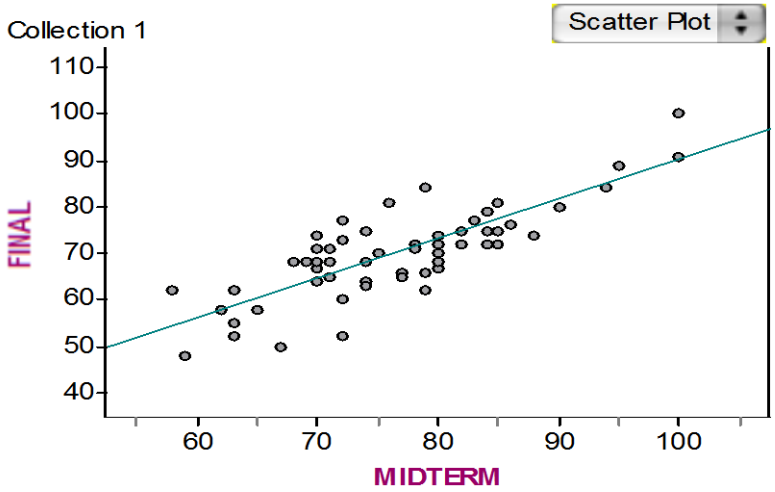
Do you think that males and females have the same final exam scores? Justify with summary stats!

Female	Male
Mean: 70.412	Mean: 69.167
Min: 55	Min: 48
Q1: 66	Q1: 62.5
Med: 71	Med: 68
Q3: 74	Q3: 76
Max: 91	Max: 100
Std.: 7.332	Std.: 12.589
Count: 34	Count: 24

Is there a relationship between midterm scores and final exam scores?



Describe: form, direction, strength, any outliers



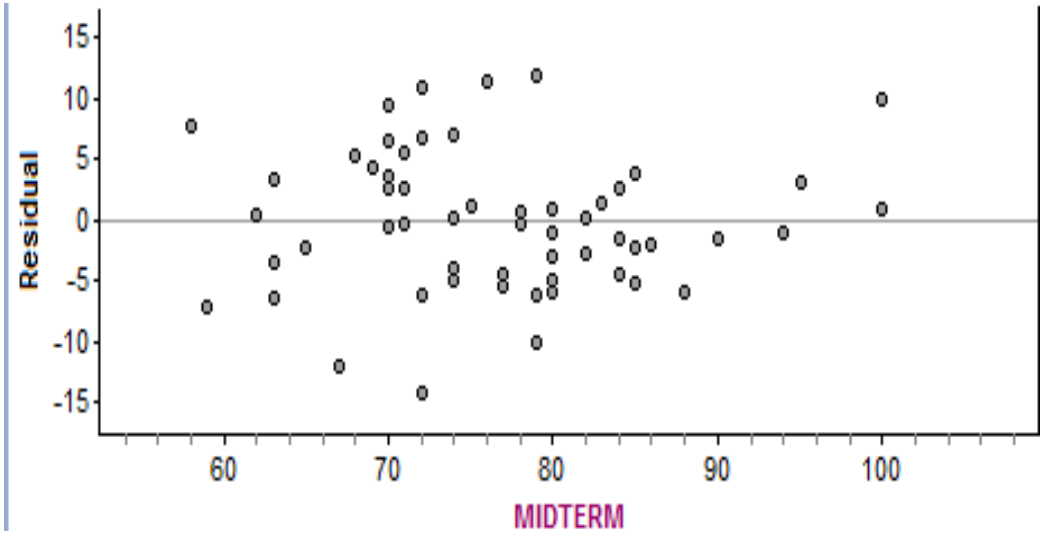
$\widehat{Final}$ = 4.865 + 0.851 Midterm

Interpret the slope (For every 1 x variable …)

r = 0.81368 r^2 = 0.66

Interpret r^2 (___% of the change in …)

Is there a relationship between midterm scores and final exam scores?



Is the linear model a good one?
Use the scatterplot, correlation, and residual plot?

Student #575

(Final)$\hat{}$ = 4.865 + 0.851 Midterm

(Final)$\hat{}$ = 4.865 + 0.851 (74)

(Final)$\hat{}$ = 67.839%

Residual: 75%-67.839%=7.161%

Student #504

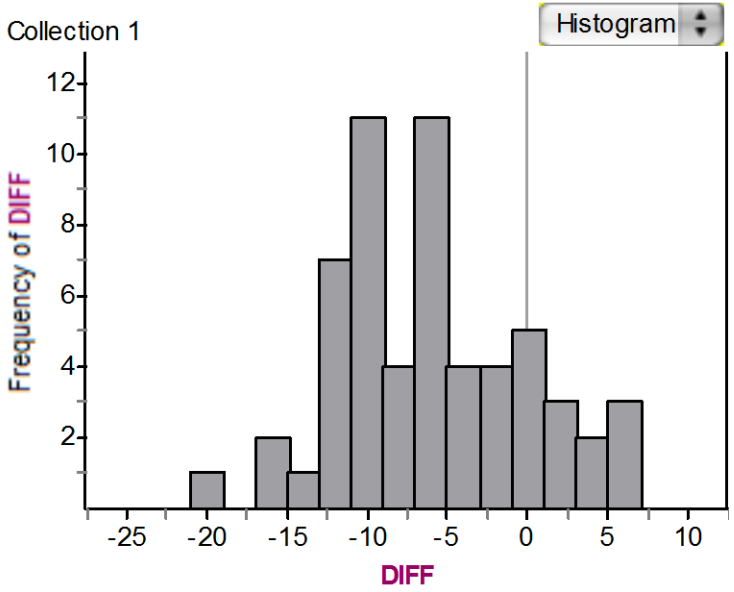
$\widehat{Final}$ = 4.865 + 0.851 Midterm

$\widehat{Final}$ = 4.865 + 0.851 (85)

$\widehat{Final}$ = 77.2%

Residual: 81%-77.2%=3.8%

Do students tend to do worse on the final exam than the midterm?



Mean: -6.483
Min: -20
Q1: -11
Med: -6.5
Q3: -2
Max: 5
Std.: 5.847

Describe (shape, center, spread, etc.)

Do students tend to do worse on the final exam than the midterm?

Conditions:

1-	1-
2-	2-
3-	3-

Ho: $\mu = 0$ Ha: $\mu < 0$

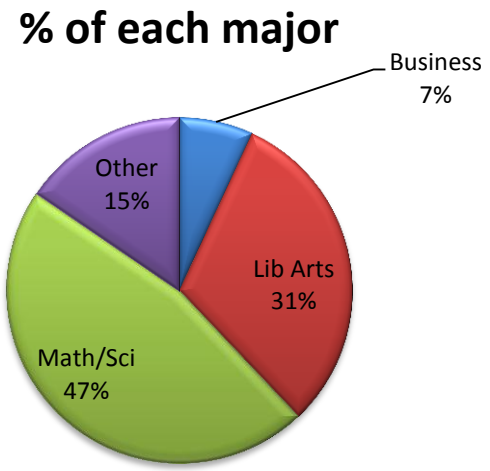
t = $\frac{\bar{x}-\mu}{s/\sqrt{n}}$ = #

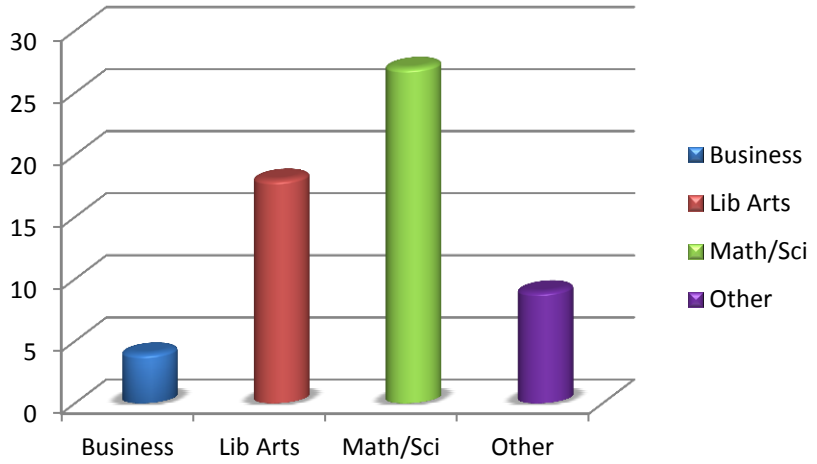
P(t < #) = _____

Conclusion
(We reject/ do not reject Ho …
We have sufficient/insufficient evidence that the average difference in final exam and midterm exam scores is …)
Therefore …

Are majors evenly distributed?

	Business	Lib Arts	Math/Sci	Other
Obs.	4	18	27	9
% of Students in class	6.897%	31.034%	46.552%	15.517%





Are majors evenly distributed?

	Business	Lib Arts	Math/Sci	Other
Obs.	4	18	27	9
Exp.	14.5	14.5	14.5	14.5
% of Students in class	6.897%	31.034%	46.552%	15.517%

State

1.

2.

Check

1.

2.

df=

Ho: the observed distribution of …

Ha:

$x^2 = \sum \frac{(\quad -- \quad)^2}{\quad\quad} + \frac{(\quad - \quad)^2}{\quad\quad} \ldots = \#$

$p(x^2 > \_\#\_) = \_\_\_\_\_$

Conclusion

Is there an association between gender and major?

Observed:

	Bus	Lib	Math/Sci	Oth
male	7	5	11	8
female	6	10	8	9

Expected:

	Bus	Lib	Math/Sci	Oth
male	6.2969	7.2656	9.2031	8.2344
female	6.7031	7.7344	9.7969	8.7656

State

1.

2.

Check

1.

2.

df=

Ho: the observed distribution of …

Ha:

$$x^2 = \sum \frac{(\quad --\quad)^2}{\quad\quad\quad} + \frac{(\quad -\quad)^2}{\quad\quad\quad} \ldots = \#$$

$p(x^2 > \_\#\_) = \_\_\_\_\_$

Conclusion

Conclusion

1. **Are the final exam scores averaging less than 75%?**
2. **Do more males take this class than females?**
3. **Are the final exam scores the same for males and females?**
4. **Is there a relationship between midterm scores and final exam scores?**
5. **Do students tend to do worse on the final exam than the midterm exam?**
6. **Are the majors evenly distributed?**
7. **Is there an association between gender and major?**